

File: Bo-Necedah CCP Final

July ***, 2001

Memorandum

To: Refuge Manager, Necedah NWR, Necedah, WI

From: Field Supervisor, ES Field Office, Green Bay, WI

Subject: Biological Opinion for Necedah NWR's Comprehensive Conservation Plan (CCP)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) of the management practices conducted at the Necedah National Wildlife Refuge (NWR) (Refuge) including those covered in their Comprehensive Conservation Plan (CCP), and their affect on the Karner blue butterfly, bald eagle, gray wolf, eastern massasauga rattlesnake, and whooping crane in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Formal consultation began on May 4, 2001, the date on which the Service received the draft Biological Assessment (BA) for management actions on the NWR.

The BO is based on information provided in the Refuge's May 4, 2001 draft BA entitled "Biological Assessment of Management Practices on the Necedah National Wildlife Refuge," as well as subsequent information received from Refuge staff. A complete administrative record of this consultation is on file at the Service's Ecological Services (ES) Field Office, 1015 Challenger Court, Green Bay, Wisconsin (GBFO).

This BO has found that Refuge activities: 1) will not adversely affect the bald eagle, gray wolf, and whooping crane, 2) will not jeopardize the eastern massasauga rattlesnake, and 2) will adversely affect the Karner blue butterfly.

The findings of this non-jeopardy BO are based on implementation of the conservation measures for the Karner blue butterfly, bald eagle, gray wolf and eastern massasauga rattlesnake as described in the "Description of the proposed project." Additional reasonable and prudent measures are included to minimize impacts of the incidental take on the butterfly.

This BO supercedes Subpermit No. 00-07 issued to Necedah NWR April 14, 2000 (expiration date: December 31, 2001).

A separate BO was completed on June 18, 2001 for impacts related to the establishment of a non-essential experimental (NEP) flock of whooping cranes which covers Refuge actions related to the project (e.g., rearing of the whooping crane chicks and related ultra-light aircraft activities).

As noted in the last paragraph of the BO, consultation should be reinitiated if, among other circumstances, the **Refuge decides to deviate from implementation of the bald eagle, gray wolf, and EMR management guidelines (other than for reasons noted in this BO), and if adult whooping cranes exhibit territorial, breeding or nesting behavior on the Refuge.**

Questions pertaining to this biological opinion may be directed to Ms. Catherine Carnes of my staff at 920-465-7415.

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Field Supervisor

cc: FWS, Fort Snelling, MN Attn: Jennifer Szymanski (ES/TE)
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(We were unable to post the following two appendices; paper copies are available at area libraries.)

Appendix B:	KBB Complexes, Potential Habitat, and Habitat to be Restored at Necedah NWR
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KBB Complex Size, Lupine Acres, and Burn Unit History

Appendix C:	Burn History and KBB Population Levels on the Necedah NWR 1993-2000.
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Consultation history

This consultation was initiated by the Necedah NWR (Refuge) upon development of their CCP for the Refuge (USFWS 2000a) which was released for public comment on July 27, 2000. The CCP identified goals and management activities that could affect federally-listed species, especially the Karner blue butterfly (KBB). Coordination between the Service's GBFO, the Refuge, and the Service's Regional ES, and Refuge Operations staffs was conducted periodically between September 2000, and March 2001, to determine the need, geographic scope, and format of the section 7 consultation. On March 19, 2001, a clear direction for the consultation was determined. Upon receipt of the draft BA on May 4, 2001, the Service's GBFO initiated formal consultation with the Refuge. The final BA was received by the Service's GBFO on May 10, 2001. Additional information was received via memo dated May 29, 2001 and periodically thereafter as needed to develop the BO.

BIOLOGICAL OPINION

Description of the proposed action

For the purposes of this consultation, the proposed action is implementation of the Refuge's goals and activities as described in their CCP (2000a, revised), and BA (2001). The action area is Necedah NWR (Refuge) and the Yellow River Focus Area (YRFA).

The Refuge consists of 43,696 acres of diverse wetland and upland habitats including open water areas, shallow marshes, pine, oak, and aspen forests, grasslands and rare savannas, all of which support a rich diversity of fauna and flora. Management is carried out by Refuge staff and includes water level manipulation, prescribed burning, mowing, timber harvest, land acquisition, public outreach and environmental education. Monitoring and research activities are conducted to guide management actions. Cooperative working relationships with universities and other Federal agencies, the state of Wisconsin, educational institutions, and non-government organizations contribute to management success. Nearly 150,000 people visit the Refuge annually to fish, hunt, hike, observe and photograph wildlife, pick berries, or just relax (USFWS 2000a). The YRFA comprises about 21,953 acres of high-quality bottomland hardwood forests and associated uplands along the Yellow River, a tributary to the Wisconsin River. It is located directly adjacent to the eastern border of the Refuge. The Service has an approved Preliminary Project Proposal for the area (Rebecca Power, USFWS, pers. comm. 2001).

A list of the Refuge's CCP goals and activities analyzed in this BO can be found in Appendix A. The key Refuge on-the-ground activities associated with these goals and activities are listed in Table 1.

Table 1. Key Activities Related to Refuge CCP Activities/Goals

- ? land conversion (savanna restoration and management)
 - ? mowing and use of hydro-axe
 - ? prescribed burning
 - ? use of fire control equipment (e.g. pump truck) for wetting down areas
- ? roadside mowing
- ? Refuge staff activities
- ? hunting
- ? silviculture
- ? foot travel (e.g. berry picking)
- ? water level management

- ? various investigations/management activities
 - ? studies/investigations/surveys and census activities
 - ? contaminant investigations
 - ? archaeological investigations
 - ? wildlife management activities
 - ? * pest plant management (other than use of pesticides)

- ? education and outreach activities
- ? cooperative programs e.g. Partners for Fish and Wildlife Program, training programs such as the Wisconsin Conservation Corps
- ? construction activities and rehabilitation activities (e.g. dam replacement)
- ? development of recreational and interpretive trails
- ? emergency actions (i.e. wildfire suppression, dam operation)

* The use of pesticides in areas that may affect federally-listed, proposed, or candidate species is not authorized by this BO.

* Refer to Appendix A for list of Refuge CCP goals and activities.

Species considered in this BO are:

?	bald eagle (eagle)	T	<i>Haliaeetus leucocephalus</i>
?	gray wolf (wolf)	E	<i>Canis lupus</i>
?	eastern massasauga rattlesnake (EMR)	C	<i>Sistrurus catenatus catenatus</i>
?	whooping crane	T	<i>Grus americana</i>
?	Karner blue butterfly (KBB)	E	<i>Lycaeides melissa samuelis</i>

E = Endangered T = Threatened C = Candidate

Of the five species noted above, Refuge activities are only anticipated to adversely affect the Karner blue butterfly. Refuge activities are not anticipated to adversely affect the bald eagle, wolf, and whooping crane, and will not jeopardize the EMR.

Description of the proposed action re: species not adversely affected or not jeopardized by the project:

Bald eagle, wolf, EMR , and whooping crane

In summary, the proposed action:

- ? is not likely to adversely affect the bald eagle,
- ? may affect, but is not likely to adversely affect, the wolf, EMR and whooping crane

The Refuge's CCP objectives for the bald eagle, wolf, and EMR, the conservation measures that will be taken to avoid impacts to these species, and the section 7 determination for each species are reviewed below. Likewise, the impact of the Refuge activities relative to whooping cranes is discussed below.

Bald eagle

The Refuge's CCP objective (USFWS 2000a) for the eagle is:

Objective 4.1.5: "Protect bald eagles nesting on the Refuge from human disturbance throughout the life of the CCP."

One occupied eagle nest currently occurs at Necedah NWR (USFWS 2001). The Refuge plans to avoid impacts to bald eagle nests that could result from Refuge activities via the following conservation measures:

Conservation Measures:

1. Implementation of the Service's Bald Eagle Management Guidelines (Guidelines) (USFWS undated). Implementation of these Guidelines will protect active nests as well as inactive nest sites. Protections measures will include:
 - a. No prescribed burning or water level drawdowns within 1/4 mile of the nest.
 - b. *Refer to Guidelines for other protective measures (USFWS undated)*
2. Refuge staff will monitor nests to document nesting. Once nesting has occurred, Refuge staff will be advised of the nest, and the Bald Eagle Management Guidelines implemented. Occupied nests will be periodically observed to determine nest success and nest production (number of eaglets fledged). A record of nest locations and nesting success will be maintained at the Refuge.
3. The location of occupied bald eagle nests will be provided to the Air National Guard-Hardwood Range for consideration relative to their overflight activities.
4. The Refuge will incorporate the conservation measures (noted above) into the Refuge's stepdown management plans (Forest Management Plan, Marsh and Water Management Plan, Cropland Management Plan, Grassland Management Plan, Fire Management Plan, Public Use Plan, Sign Plan, LE Plan, Fur Management Plan Disease Contingency Plan, IPM Plan (P.56 of CC) and any other plans whose implementation could affect the bald eagle). The Refuge will provide the draft stepdown plans to the Service's GBFO for review and concurrence with a cover memo describing how the plans comply with the conservation measures in this BO and requesting concurrence of the finding.
5. The Refuge will provide the above noted conservation measures to all staff members and hold an annual informational meeting with appropriate staff to review the conservation measures for the bald eagle and their implementation on the Refuge.

The only deviations from adherence to the bald eagle management guidelines will be in cases of dam operations for safety purposes, for activities related to wildfire suppression, and in cases where the Refuge in coordination with the Service's GBFO determine that the activity will not adversely affect the bald eagle. Dam safety operations entail a Refuge staff person operating at the dam e.g. removing a board from the dam after heavy rains. Fire suppression activities in the areas near the nest are likely to benefit the species as they could save an active nest tree.

Based on a review of the Refuge activities, and implementation of the protective measures noted above, the Service's GBFO concurs with the Refuge, that Refuge actions will not result in the take of the bald eagle. Further, we conclude that Refuge actions are not likely to affect the bald eagle.

Gray wolf

The Refuge's CCP objective (USFWS 2000a) for the gray wolf is:

Objective 4.1.3: "Maintain resident packs of eastern timber wolves on public lands in central Wisconsin to aid in their recovery and de-listing, in accordance with the Eastern Timber Wolf Recovery Plan."

Based on winter wolf track surveys, there may be two dens and/or rendezvous sites on the Refuge, although howling surveys have not detected wolf pups as yet (Richard King, USFWS, pers. comm. 2001) therefore definitive evidence of denning is lacking. One young female wolf was trapped on the Refuge in 1999 as part of a wolf survey effort. The Refuge plans to avoid impacts to gray wolves that could result from Refuge activities via implementation of the following conservation measures:

Conservation Measures:

2. All new wolf den and rendezvous sites verified by wildlife biologists as well as den and rendezvous sites used within the last two years will be protected through implementation of the "Management Policy for Wolf Den and Rendezvous Sites" (Policy) (Wydeven and Schultz 1993. Protective measures (as noted in the Policy) are:
 - a. Preclude land use activities including timber harvest within 100 meters (330 feet) of a wolf den at any time of the year. No new roads or trails should be constructed within this area and existing trails and roads should be obliterated or closed. (Note: Recommended road closures do not apply to major public travelways e.g., town, county, state, or federal highways.
 - b. Restrict human activity within 100 meters (330 feet) of a den to those activities specifically related to wolf research and generally done only when wolves are not active in the area. Other human use shall be restricted through trail and road closures or obliteration.
 - c. Within 100-800 meters (330-2,640 feet), land use activities would be permitted from August 1 through February 28. Timber harvest, if done should not leave the wolf den or rendezvous sites isolated from other areas of standing timber. No new permanent roads or trails should be constructed in the zone and temporary roads and trails should be closed to vehicle traffic after timber harvest are completed. Existing rails and roads should be closed on a case-by-case basis; this does not apply to major public travelways.
 - d. Protection of rendezvous sites is generally less critical than for den sites and should be based on a case by case basis and analysis of expected impacts.

2. Continue policy of gating off interior roads and berming access roads upon completion of timber sales.
3. Continue closure of coyote hunting and trapping year-round on the Refuge.
4. Issue annual press releases prior to the gun deer season advising hunters of the no coyote closure.
5. Continue winter track surveys to track wolf distribution and howling surveys in late May or early June to monitor pack production. In addition cooperate with the Wisconsin Department of Natural Resources (DNR) on aerial monitoring of radio collared wolves to determine pack territory and obtain dispersal information.
6. Post sign on the Refuge reminding hunters of coyote closure.
7. Continue to include coyote closure in Refuge's hunting pamphlets which are available in leaflet boxes throughout the property. In subsequent printing of the hunting pamphlet the section pertaining to coyote closure will be highlighted or emphasized.
8. Report all actively used wolf den and rendezvous sites found by Refuge staff to the local Wisconsin DNR wildlife biologist responsible for wolf monitoring.
9. Continue to collaborate with the Wisconsin DNR on wolf trapping and radio tracking on the Refuge and in the YRFA and document wolf locations annually including locations of den and rendezvous sites. Provide this information to Refuge staff for use in planning management activities.
10. The Refuge will incorporate the conservation measures (noted above) into the Refuge's stepdown management plans (Forest Management Plan, Marsh and Water Management Plan, Cropland Management Plan, Grassland Management Plan, Fire Management Plan, Public Use Plan, Sign Plan, LE Plan, Fur Management Plan Disease Contingency Plan, IPM Plan (P.56 of CC) and any other plans whose implementation could affect the wolf). The Refuge will provide the draft stepdown plans to the Service's GBFO for review and concurrence with a cover memo describing how the plans comply with the conservation measures in this BO and requesting concurrence of the finding.
12. The Refuge will provide the above noted conservation measures to all staff members and hold an annual informational meeting with appropriate staff to review the conservation measures for the wolf and their implementation on the Refuge.

The only deviations from adherence to the wolf den and rendezvous site guidelines will be in cases of dam operations, for safety purposes, for wildfire suppression activities, and in cases where the Refuge in coordination with the Service's GBFO determine that the activity will not adversely affect the wolf. Dam safety operations entail a Refuge staff person working at the dam e.g. removing a board from the dam after heavy rains. Fire suppression activities are anticipated to benefit the wolves that may be utilizing the habitat, by preserving as best as possible, the habitat area.

Based on a review of the Refuge activities, and implementation of the protective measures noted above, the Service's GBFO concurs with the Refuge, that Refuge actions will not result in the take of the wolf. Further we conclude that Refuge actions are likely to be beneficial to the wolf and therefore may affect, but are unlikely to adversely affect the wolf.

Eastern Massasauga Rattlesnake

The Refuge's CCP objective (USFWS 2000a) for the EMR is:

Objective 4.1.4: Continue international management efforts for the eastern massasauga rattlesnake, including research, to help preclude the need for federal listing of the species throughout the life of this CCP.

EMR's have been known to occur on the eastern edge of Necedah NWR along the Yellow River. Currently, no EMRs are known to exist on the Refuge (USFWS 2001). The Refuge plans to avoid impacts to the EMR that could result from management activities via the following conservation measures:

Conservation Measures:

1. Prior to any Refuge actions on lands east of State Highway 80 and south of Sprague, surveys for the EMR will be conducted. Refuge staff will utilize survey and handling techniques that avoid harming the snake. Assistants in this work will be trained in proper survey techniques and supervised appropriately to insure adverse impacts to the snakes are avoided.
2. Should EMRs occur on the Refuge, the protective measures in "The Eastern Massasauga Rattlesnake: A Handbook for Land Managers 2000" (Johnson et al. 2000) will be implemented. These measures were formulated to protect the EMR from habitat loss, persecution, road mortality, collection, and disease transmission. Measures include protection of hibernation habitat and could mean adjusting pool management on the Refuge.
3. The Refuge will implement the protective measures in "The Eastern Massasauga Rattlesnake: A Handbook for Land Managers 2000" (Johnson et al. 2000) when working with private landowners on Wildlife Management Agreements (WMAs) for the EMR.

4. The Refuge will coordinate with the Service's GBFO on any research activities conducted on the EMR on the Refuge to minimize adverse effects of the project and to help insure long term benefits for the EMR.
5. The Refuge will incorporate the conservation measures (noted above) into the Refuge's stepdown management plans (Forest Management Plan, Marsh and Water Management Plan, Cropland Management Plan, Grassland Management Plan, Fire Management Plan, Public Use Plan, Sign Plan, LE Plan, Fur Management Plan Disease Contingency Plan, IPM Plan (P.56 of CC) and any other plans whose implementation could affect the EMR). The Refuge will provide the draft stepdown plans to the Service's GBFO for review and concurrence with a cover memo describing how the plans comply with the conservation measures in this BO and request concurrence on the finding.
6. The Refuge will provide the above noted conservation measures to all staff members and hold an annual informational meeting with appropriate staff to review the conservation measures for the EMR and their implementation on the Refuge.

Based on implementation of the protective measures noted above, the Service's GBFO concurs with the Refuge, that Refuge actions will not result in the take of the EMR with the exception of research activities. However, research activities should be beneficial to EMR conservation and recovery, and therefore are not anticipated to jeopardize the EMR. (Note: The EMR is treated as a proposed species under section 7 of the act with a conference required only if the the action could jeopardize the species). Should the EMR become federally-listed, Service section 10 permit(s) would be needed to authorize research activities.

Whooping Crane

1. The effect of the CCP whooping crane goal on the crane:

The Refuge's CCP objective (USFWS 2000a, revised) for the Whooping Crane is:

Objective 4.1.2: "Manage for Whooping Cranes should they use the Refuge for migratory or breeding habitat."

Managing for the whooping crane would result in beneficial affects for this species, and therefore this management goal is not likely to adversely affect the species.

2. The effect of the CCP whooping crane goal on the bald eagle, wolf, EMR and KBB:

Management for whooping cranes on Necedah NWR is anticipated to involve not drawing down pools that cranes may choose to nest on and implementing any management guidelines

that are developed for protection of nest sites. Currently, as no whooping cranes are present at the Refuge, and breeding age birds are unlikely to utilize the Refuge prior to 2007 (when they are about six years old), this goal, at present, has no effect on other species. **If adult whooping cranes exhibit territorial, breeding or nesting behavior on the Refuge, then consultation should be reinitiated to determine if management for this species will affect other listed or candidate species on the Refuge.**

3. The effect of implementation of other CCP goals/activities (including stepdown plans) on the whooping crane:

As it uncertain if and when cranes may become established in Wisconsin, at this time, Refuge goals/actions are expected to have no effect on the whooping crane.

However, if the whooping crane should re-establish in Wisconsin and utilize the Refuge as a breeding/nesting area then the Refuge should consider activities that could adversely affect the whooping crane and take measures to avoid the adverse effects.

Activities that could adversely affect the crane include the drawdown of pool(s) being utilized by the crane for nesting/breeding habitat, conducting a prescribed burn in or near a management unit containing a nest site, and human or vehicular disturbance of the area.

Measures that should be taken to avoid impacts to the cranes include:

- a. Maintaining normal pool levels (i.e. not drawing down pools) of pools on which cranes are exhibiting territorial, breeding and/or nesting behavior.
- b. Precluding prescribed burning in or near a unit containing an active whooping crane nest site.
- c. Prohibiting human and vehicular traffic in or near the nest site.
- d. Implementing any whooping crane nesting guidelines that may have been developed for nest protection.

The Refuge should reinitiate consultations should whooping cranes exhibit territorial, breeding and/or nesting behavior and design their management activities to avoid take of the cranes.

Note: On June 26, 2001, the Service published the final rule on establishment of a non-essential, experimental population (NEP) of whooping cranes that would be raised at Necedah NWR. The BO for the NEP was completed June 18, 2001.

Because implementation of the proposed actions, as reviewed above are not likely to adversely affect the bald eagle, wolf, EMR, and whooping crane, these species will not be considered further in this opinion.

Description of the proposed action re: species adversely affected by the action

The only species that will be adversely affected by Refuge actions is the KBB. Take of the KBB will result mainly from savanna restoration and management activities and is therefore considered short-term take because KBBs lost due to the management activities (e.g. prescribed burning or mowing activity) recolonize the site as the lupine recovers from the treatment.

Karner blue butterfly (KBB)

The Refuge's CCP objective (USFWS 2000) for the KBB is:

Objective 4.1.1: “Establish one large population of Karner blue butterflies on the Refuge as stated in the Karner Blue Butterfly Recovery Plan ... ”

To accomplish this objective, the Refuge plans to restore and maintain a total of about 3,500 acres of savanna habitat. About 500 acres of savanna habitat are present on the Refuge to date, of which about 368 acres, distributed among 13 KBB complexes and 18 burn units, support KBBs. Another 3000 acres of savanna will be restored from currently forested areas that have sandy soils (plainfield and friendship soils) with the potential to support lupine and KBBs. The 3,500 acres of savanna will be distributed between about 35 sub-sites (individual KBB sites, several of which are, or will be contained in individual burn units). All the sub-sites are located within an approximately 15 square mile area. Restoration will involve converting forest lands to savanna through timber harvests followed with management via burning and mechanical management (mowing and hydro-axing) (refer to Appendix B).

Acres of short term take of KBB occupied habitat is anticipated to be the following:

Burning/mowing of <i>existing</i> savanna restoration units:	368
Burning/mowing of <i>projected</i> savanna restoration units	<u>2,208</u>
Total:	2,576 acres

Acres of permanent take:

Graveling or paving of trails (Lupine Loop and Cranberry Loop):	0.5 acres
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Other activities conducted by or on the Refuge that may result in the take of KBBs (if wild lupine is present) include roadside mowing, trail maintenance and mowing, silviculture activities, foot travel (e.g.

berry picking), various investigations/management activities (e.g. biological surveys, contaminant, minor rehabilitation work, and archeological investigations, wildlife management activities, and pest plant management), education and outreach activities, and implementation of cooperative programs (refer to Table 1). These activities may result in the loss of KBBs (especially eggs and larvae) from mowing or inadvertent trampling of lupine plants. Take may also occur as a result of Refuge actions taken to address emergency situations such as wildfire suppression. The level of take of KBBs related to these activities is unknown at this time, unquantifiable, and considered to be short term.

The following conservation measures have been identified to avoid or minimize take of the KBB:

Conservation Measures

Measures to avoid take of occupied habitat:

1. Construction Activities: No construction activities (including paved and gravel parking areas) will occur in occupied KBB habitat. The only exception to this will be for the graveling or paving of two hiking trails (Cranberry Loop and Lupine Loop).

Measures to minimize take of KBBs:

1. Savanna restoration and management

Mowing and Use of Hydroax in Savanna Units with Lupine:

- a. When mowing of management units is conducted, the mower blade will be set at least eight inches from the ground. Mowing shall be conducted between August 15 and April 15 to minimize harm to the KBBs eggs and larvae. When possible mowing will be conducted after mid-October to allow seed set of late flowering nectar plants.
- b. Mowing of management units with lupine shall be done no more than once per year (refer also to a above).
- c. Hydro-axe operation shall be conducted between August 15 and April 15, no more than one time per year.

2. Burning of savanna units: 2001-2003

- a. North Refuge: Pool 19 (PR-1, PR-2 and PR-3) will be left unburned to act as a core area and refugia site for KBBs. In addition one other burn unit with a population of at least 100 KBBs will be left unburned to act as a refugia site (refer to Appendix B).

- b. South Refuge: South Rynerson (PR-29A, PR-28B) will be left unburned to act as a core area and refugia site for KBBs. In addition, one other burn unit with a population of at least 100 KBBs will be left unburned to act as a refugia site (refer to Appendix B).
 - c. The portion of the burn units occupied by KBBs will remain unburned for at least two years to allow recovery of the butterfly unless KBB population levels are at or above pre-burn levels.
 - d. Unburned areas of occupied KBB habitat (left after a burn) will remain unburned to act as natural refugia areas for the KBB.
 - e. The burn protocol will be re-evaluated after two years (refer to Reasonable and Prudent Measure No. 6 and Term and Condition No. 6).
3. Roadside mowing:
- a. Roadside mowing in occupied KBB areas shall not exceed six feet from either side of the road. A wing mower shall be used with the blade set at least eight inches from the ground. Mowing shall be conducted between August 15 and May 1, and *when possible prior to April 15*, to minimize harm to KBB eggs and larvae that may be present on lupine plants.
1. Silviculture Activities:
- a. All silviculture activities in occupied KBB habitat will be designed to avoid or minimize impacts to the KBB.
 - b. Slash and stumps will not be placed in occupied KBB habitat.
 - c. Conservation measures will be written into timber sale contracts when necessary to protect KBB's and their habitat from silviculture operation (e.g. clearly identify areas that logging equipment can use to preclude entry into KBB occupied areas).
 - d. Skid trails and hauling roads will be designed to avoid or minimize impacts to lupine and KBBs.
5. Foot Travel:
- a. The public will be encouraged to restrict foot travel to existing trails through occupied KBB habitat by Refuge staff and via signage. Refuge staff will avoid trampling lupine plants to the extent possible while in occupied KBB areas.

6. Surveying/Monitoring Activities Conducted by Refuge:

- a. KBB adult surveys done by Refuge will be conducted in a manner to minimize disturbance to the butterfly, its eggs and larvae, and to wild lupine. Netting and handling of adults (if necessary) shall be kept to a minimum. Measures should be taken to avoid trampling lupine. Adult surveys shall be done during the second flight period per survey methods established by King (1998).
- b. Other survey, monitoring, or wildlife management activities conducted by Refuge staff shall be conducted in a manner to minimize disturbance to the KBB, its eggs and larvae, and to wild lupine. Measures should be taken to avoid trampling lupine. If greater than one acre of occupied KBB habitat will be affected by any of these types of projects, the Refuge will coordinate with the Service's Service's GBFO on measures to minimize impacts to the KBB prior to project activities. No permanent take of KBB habitat shall occur as a result of these projects.

7. Various Investigations/Management Activities Not Conducted by the Refuge:

- a. Refuge staff will work with individuals wishing to use the Refuge for various investigations/management activities (e.g., research, contaminant surveys, archeological investigations, census, surveys, etc.) in designing project activities to avoid (if at all possible) or minimize impacts to the KBB.
- b. If greater than one acre of occupied KBB habitat will be impacted by the above noted activities, the Refuge will coordinate with the Service's GBFO on measures to minimize impacts to the KBB prior to the conductance of project activities.

8. Outreach/Education Activities:

During public outreach and educational field activities that involve use of KBB occupied areas, visitors will be advised to avoid trampling lupine plants. Netting and handling of the KBB will be kept to a minimum. Netting of KBBs is allowed for education purposes (if necessary to view a KBB) by a biologist trained in use of a butterfly net. Only a soft insect/butterfly net with fine mesh shall be used for netting KBBs and the KBBs shall be replaced at the same location where netted.

9. Cooperative Programs (Partners for Fish and Wildlife Program, Youth Training Programs e.g. Wisconsin Conservation Corps):

- a. Individuals from the Wisconsin Conservation Corps involved in projects on the Refuge (e.g. construction of woods trails, bridges, etc) shall be trained to identify lupine and the KBB (if working in KBB occupied areas) and instructed to avoid trampling lupine plants.

Note: The effect of the Service's Partner program activities on the KBB is covered in a separate Intra-Service Section 7 BO (refer to "Factors affecting species environment within the action area and analysis of effects, YRFA").

10. Emergency procedures (i.e. wildfire suppression).

- a. The impact of wildfires to KBB occupied savanna units should be assessed and the burn plans of affected KBB occupied unit(s) re-evaluated to remain as consistent as possible with the burning protocols identified in No. 2 above.

Status of the species:

Karner blue butterfly listing status and current range

The KBB was proposed for federal listing on January 21, 1992 (USFWS 1992a), and listed as endangered on December 14, 1992 (USFWS 1992b). No critical habitat has been designated for this species.

Historically, the KBB occurred in a narrow geographic area that extended from eastern Minnesota, across portions of Iowa, Wisconsin, Illinois, Indiana, Massachusetts, Michigan, Ohio, Pennsylvania, New York, New Hampshire, Maine, and the province of Ontario, Canada. Over the past 100 years, the KBB populations have declined significantly throughout the species' range. It is now believed extirpated from Ontario, Maine, Massachusetts, Pennsylvania, Iowa, and Illinois. Currently populations of the KBB occur in seven states: Minnesota, Wisconsin, Indiana, Michigan, Ohio, New York, and New Hampshire. In 1998, it was reintroduced to Ohio as part of a five-year reintroduction program.

The decline of KBB populations in the Midwestern states of Iowa, Illinois, Ohio, Indiana, Michigan, and Wisconsin has resulted chiefly from loss of habitat due to fire suppression, conversion by agriculture and forestry practices and commercial and residential development (USFWS 1999a). In addition, incompatible management practices (e.g., timing of controlled burns and mowing) within suitable habitat can adversely affect the KBB.

c. Life history

The KBB is a member of the Order Lepidoptera, Family Lycaenidae. Adult butterflies are rather small, with a wingspan of between 2.2 and 3.2 centimeters. The KBB has two broods, or adult flight periods, each year. Eggs that have overwintered from the previous year hatch in April. The larvae feed on wild lupine leaves and mature rapidly. Near the end of May, the larvae pupate and adult butterflies emerge very late in May in most years. The adults are typically in flight for the first 10 to 15 days of June when the wild lupine is in bloom. Female KBBs lay eggs on or near wild lupine plants. The eggs hatch in about one week and the larvae feed for about three weeks. They then pupate and the second brood of adults appear about the second or third week of July. This flight of adults lay their eggs among leaf litter or on grass blades at the base of lupines or on lupine pods or stems; these eggs do not hatch until the

following spring (Schweitzer 1989, Dirig 1979). Generally, by late August, no adults remain. Cold and/or rainy weather can delay the two flight periods of the butterfly.

In addition to wild lupine, the KBB requires tall grass for late afternoon basking and overnight roosting, some shading vegetation to prevent overheating, a source of water, and nectaring sources for the adults. A variety of understory plants serve as nectaring sources for the adults (USFWS 2000b).

Since the only known food plant for KBB larvae is wild lupine, the distribution of the butterfly is closely tied to the distribution of habitats that support the wild lupine. In the midwestern states, the habitat is generally dry prairies, sandy openings, including openings in oak savannas, jack pine (*Pinus banksiana*) stands, and dune or sandplain communities. Habitat is also present along road, railroad, and utility line rights-of-ways and in forest plantations in Wisconsin. For more information on the life history and ecology of the KBB, refer to Chapter II.B (pp. 46-51) (WDNR 2000) and Appendix A of the HCP/FEIS (pp. A-8 to A-33) (WDNR 2000).

d. Population dynamics

Wisconsin supports the largest and most widespread populations of the KBB. The butterfly is known from over 270 locations in Wisconsin, and most of the populations can be grouped into about fifteen large populations areas in central and northwest Wisconsin (refer to Chapter II.B of the HCP (pp. 52-59 for distribution information) (WDNR 2000). About two-thirds of the KBB colonies are on state, county, or federal lands. Publicly owned lands supporting major KBB populations include Wisconsin DNR lands (e.g., several Fisheries and Wildlife Management areas, Black River State Forest, and Hartman Creek State Park), Necedah National Wildlife Refuge (NWR), Air National Guard (ANG) Hardwood Range, Fort McCoy Military Reservation, and many county forest lands. The number of remaining KBB populations in Wisconsin is higher than elsewhere throughout its range. Its presence on a number of medium to large public properties offering opportunities for large-scale habitat restoration and metapopulation management, suggests that recovery possibilities for the KBB and its habitat in Wisconsin is promising (Bleser 1993).

Literature on the historic distribution of the KBB suggests that this species occurred as shifting clusters of populations distributed across a vast fire-swept landscape covering thousands of acres. While the fires resulted in localized extirpations, vegetative succession following these fires maintained suitable habitat and allowed rapid population expansion (Schweitzer 1989). The habitat of the butterfly is maintained by periodic disturbance, which serves to create or maintain openings in forest canopies that are necessary for wild lupine to thrive.

The KBB is an example of a species for which suitable habitat occurs in relatively small areas (or patches) distributed over larger areas (Zaremba 1991). Like other species whose habitat occurs in patches rather than large continuous tracts of land, populations of the KBB exist as dynamic collections of subpopulations that are interconnected genetically by dispersal. Collectively these interconnected subpopulations make up a metapopulation. Metapopulations continually shift in distribution across the landscape as habitat patches change from suitable to unsuitable habitat. This change in habitat suitability

is due to varying stages of disturbance and succession (Givnish et al. 1988, Schweitzer 1989). Three theoretical metapopulation structures that KBBs may exhibit are reviewed in Appendix A of the HCP/FEIS (pp. A-34 to A-42) (WDNR 2000). Based on dispersal research (King 1998) and KBB monitoring data, it appears that the KBB population at the Refuge exhibits characteristics of both a patchy population and a core-satellite population (USFWS 2000b).

To preserve species with patch distributions, it is necessary to maintain: (1) existing patches of suitable habitat, (2) the processes that create new habitat patches, and (3) the corridors that allow a species to migrate between habitat patches (Harrison et al. 1988). Open linear areas such as road and railroad rights-of-way, utility corridors, and forest roads and trails can serve as dispersal corridors for the KBB, allowing them to re-colonize or colonize wild lupine patches. Various research has shown dispersal of the KBB to range from about 200 yards (about 600 feet) to about 2 miles. Dispersal research at Refuge has demonstrated that some KBBs are able to disperse at least 1,150 meters (0.7 miles) over open landscapes (King 1998). For further information on KBB dispersal, refer to Appendix A of the HCP/FEIS pp. A-20 to A-24 (WDNR 2000).

Environmental baseline

a. Status of the species in the action area

Karner blue butterflies are thought to have been historically present on the Refuge and in the YRFA. Based on information in the BA, savanna habitat was present on the project lands at the time of the original land surveys (mid-1800's) and KBBs most likely occurred on these savannas and benefitted from the drainage and expanded burning of these areas that occurred at the beginning of the 20th Century.

The Refuge and the YRFA are located within the Documented Range of the KBB in Wisconsin (a five million acre area) which comprises a significant portion of the butterfly's range. Of the seven states that currently support the KBB, Wisconsin supports the greatest numbers and best populations of the butterfly. The Documented Range includes 13 key KBB areas [Areas of Conservation Emphasis (ACEs) which contain Significant Population Areas (SPAs)] (WDNR 2000). KBB population areas are concentrated in five general regions of the state: West-Central (southern portion), West-Central (northern portion), Central, East-Central and Northwest. Chapter II.B. of the HCP (pp. 52-59) (WDNR 2000) describes the Documented Range of the KBB (p. 56) and the distribution and abundance of the species within this range.

KBB numbers in Wisconsin vary from unknown, to a few, to several thousand depending on site location and size. KBB monitoring data other than presence and absence is lacking for most sites. The largest populations of KBBs in Wisconsin are thought to occur at Fort McCoy and the Refuge. The Refuge has been monitoring KBBs annually since 1993. Numbers of butterflies surveyed on the Refuge

ranged from about 1700 in 1993 to about 5,600 in 1999, with the highest number counted (about 7,300) in 1996 (Appendix C). There are 13 KBB population complexes within the Refuge (Appendix B). There are at least six KBB sites in the YRFA (Bill Peterson, USFWS, pers. comm. 2001). Large KBB populations are likely present in the Jackson County Forest, and Crex Meadows and Fish Lake Wildlife Areas (Burnett County) as well, where habitat is more abundant.

The Refuge and the YRFA occurs within the Glacial Lake Wisconsin Recovery Unit (RU), one of five recovery units identified by the KBB Recovery Team in Wisconsin. Within this RU, the working draft KBB Recovery Plan (Plan) proposes restoring five viable populations of the KBB, two of which would be large viable populations. The Plan recommends restoration of one of the large populations at the Refuge and another smaller population centered at Air National Guard (ANG) -Hardwood Range (USFWS 2000b). Establishment of one large viable metapopulation of KBBs at the Refuge will fulfill one of the recovery goals for this RU and it is possible that KBB sites restored in the YRFA will contribute to establishment of a second KBB metapopulation centered around the ANG - Hardwood Range. The work by Necedah to restore KBB population will result in, or contribute to (YRFA), fulfilling two of the five recovery goals for this RU, a significant contribution to recovery of this species.

No critical habitat has been designated for the KBB; therefore, the Refuge's management activities will not impact critical habitat.

b. Factors affecting species environment within the action area and analysis of effects:

Necedah NWR

Past and present activities affecting the KBB at the Refuge have been, by far, more positive than negative. Significant conservation and recovery actions have been realized through the restoration and management of about 500 acres of savanna habitat for the KBB. Several research efforts at Necedah (King 1998, 2000) focusing on habitat management and KBB dispersal have assisted in determining management strategies for the butterfly.

The Refuge has held Service subpermits for take of KBBs related to savanna management, research, and KBB monitoring since 1994. The permits contain special conditions to minimize the impacts of research, prescribed burning, and mowing activities in KBB occupied areas. Conditions in the permit include limiting mowing to after September 1st (after lupine has senesced), and not burning of adjacent KBB management units in the same year unless special precautions are taken to protect areas occupied by the butterfly.

The take of KBBs resulting from savanna management activities is considered short-term take because KBBs lost due to the management activities (e.g. prescribed burning or mowing activity) recolonize the site as the lupine recovers from the treatment. Lupine responds well to burning and mowing and will regrow after these treatments, often more vigorously because of the reduction of canopy cover, competition, and, in the case of prescribed burns, exposure of mineral soil. In addition, not all KBBs and/or lupine are affected by the management treatments. It is anticipated that many KBBs would

survive mowing activities as mowing is conducted after lupine has senesced and the mower blade is set 8 inches off the ground to avoid impacting KBB eggs that normally occur on the lower portion of the lupine stem. Adult survival during a summer burn has been documented by the Refuge on two savanna sites (Rynearson South and Goose Pool). The sites were burned on July 22, 1994. Of a total of 227 KBBs marked prior to the burns, 10 were found to have survived the burns (Richard S. King, *in litt.* 2000). It is also believed that KBB eggs and larvae are surviving burns because of the patchy nature of the fires that tend not to burn entire KBB occupied sites (Richard S. King, USFWS, pers. comm. 2001).

Management of savanna habitat is a crucial component in the recovery of the KBB. The Refuge believes that the greatest threat to the KBB at the Refuge is succession (USFWS 2000a).

The ability of the KBB to disperse over the open landscape of the Refuge is also contributing to the re-occupation of treated sites. Research by King (1998) documented that the mean distance between all locations (MDM) for female KBBs was about 70 meters (0.04 miles) (1st flight) to 360 meters (0.22 miles) (2nd flight), and for males, 457 meters (0.28 miles) (1st flight) to 215 meters (0.13 miles) (second flight). Of the individuals that were located greater than three times, movements in excess of 1,500 meters (0.93 miles) were documented. Ten percent of all KBBs with multiple captures were shown to travel at least 1.4 miles during the second flight of 1995 and one individual female traveled at least 4.1 miles during the same flight (USFWS 2001, King, unpublished data).

Survey data collected by the Refuge since 1993, while variable, demonstrates that the KBB population is surviving the management treatments and in many cases populations are increase the year after burn (refer to Appendices B and C). The KBB populations at the Refuge in 1999 and 2000, were 5567 and 5053 respectively, close to the 6000 KBBs recommended by the KBB Recovery Team as the number needed to establish a large viable population of the butterfly (USFWS 2000b).

The Refuge's education and outreach activities relative to the KBB have heightened the awareness of visitors and the local community to the importance of the butterfly and the savanna habitat on which it depends thus gaining the support of the public for conservation of this species.

Minor take of KBBs from trampling of lupine plants with eggs or larvae present may be occurring or could have occurred on the Refuge in the past from education and outreach activities and from visitors including berry pickers, hikers, and researchers engaged in various studies, surveys and census activities. Take of KBBs due to these activities is considered extremely minor and to have to no significant effect on the population of KBBs at the Refuge. Some additional take could have occurred from mowing of roads and trails. However it does not appear that this take had a significant impact on the population of the KBB on the Refuge as evidenced by the survey data.

Historically, wildfires have played an important role in the establishment and maintenance of savanna habitat at the Refuge (USFWS, 2000a). Since listing of the KBB in 1992, no wildfires have occurred on occupied KBB sites (Richard S. King, pers. comm. 2001).

Some take of KBBs has probably occurred at the Refuge from butterfly collisions with vehicles using Refuge roads and trails. It is difficult to definitively assess this effect as no data are available on the frequency or the extent to which such collisions impact KBB populations. However, because the KBB survey data documents good KBB population numbers at the Refuge, the effect to the population appears to be minimal.

YRFA:

Several positive factors affecting the KBB have occurred in the YRFA. Refuge staff have been and are currently working with private landowners to conserve and/or restore habitat for the KBB and the EMR through the Partners for Fish and Wildlife Program (Partners Program) in this area. This program has received Endangered Species Incentive Program (ESIP) funding (Service program) for three years, part of which has been used to secure Wildlife Management Agreements (WMAs) with private landowners for the conservation of the KBB and EMR. Both species have a similar habitat requirement, open savanna areas. The Partners Program has secured 16 WMAs for restoration or enhancement of about 851 acres of habitat in the YRFA to date (Bill Peterson, USFWS, pers. comm. 2001).

Note: The affect of the Service's Partner program activities on the KBB, is covered in the Intra-Service Section 7 BO completed for issuance of the incidental take permit (ITP), TE 010064-2 and therefore are not covered in this BO (USFWS 1999). The ITP was issued for implementation of the Wisconsin Statewide Habitat Conservation Plan (HCP) for the KBB. Section 7 coverage for each WMA activities that may affect the KBB is addressed through individual streamlined Intra-Service Section 7 consultations between the Service's Green Bay Field Office and various Service offices implementing the Partners program.

Other positive benefits for the KBB have been realized through the outreach and education efforts that have been directed at landowners in the YRFA. The Refuge has done educational mailings, and in March 2000, held a focus group meeting with landowners to identify landowner issues, opportunities and information needs. The Refuge has also been working with the Central Wisconsin Basin Partnership, a Wisconsin DNR-coordinated group of agencies, private organizations, university faculty, and others interested in natural resource management. The Yellow River has been adopted by the Partnership as the focus of a regional management effort that includes the Refuge's Yellow River Focus Area and lands south of Necedah to the Wisconsin River, including Buckhorn State Park and newly acquired Wisconsin DNR lands adjacent to the park. The Partnership fosters creative approaches to maintaining ecosystem sustainability which should promote KBB conservation. The first year of a research effort funded by the Service has been completed in the YRFA. The research is providing information on the structure and habitat use of the forest community in the YRFA. The information from this study will help the Refuge assist private landowner management and restoration activities, through the Partners program, in ways that will also benefit the KBB and other species of special management concern that utilize this area e.g. the EMR, migratory birds, and rare mammals, insects, and reptiles.

A Federal action that is contributing to conservation of the KBB in the YRFA is the Service's issuance of the incidental take permit (ITP) TE 010064 for implementation of the Wisconsin Statewide HCP for the KBB. The ITP promotes conservation efforts for the butterfly on private lands as it provides automatic permit coverage for take of KBBs to three private landowner groups. These groups are: (1) forestry landowners with less than 1000 acres of land, (2) the agricultural community, and (3) non-subdivision residential land owners. The YRFA includes all three categories of landowners. Taking of the KBB can occur for any normal lawful activity such as habitat management, forestry activities, permanent or secondary home construction, and pesticide application (WDNR 2000). *This group would not be authorized to intentionally "take" the KBB.* By providing regulatory relief to these groups of landowners they are more willing to work with the Service (e.g. on WMA noted above) and other agencies to conserve the KBB.

Another aspects of the ITP is an educational/outreach initiative that is being conducted by the 26 initial partners to the HCP. Partners are providing conservation information on the KBB to private landowners, some of this information is likely to be reaching private landowners in the YRFA thus promoting conservation of the butterfly in this area.

Because gypsy moths are spreading throughout central Wisconsin, it is likely that some landowners in the YRFA are using pesticides that harm the KBB to control the moth. Several insecticides are registered and available to private homeowners or commercial applicators for use in controlling gypsy moths including carbaryl, diflubenzuron, acephate and Btk all of which cause KBB mortality.

Effects of the proposed action

Direct effects

Direct take of KBBs will occur as a result of implementation of the proposed actions. The majority of take will be due to the loss of KBB eggs, larvae and adults to management actions (e.g., burning and mowing) of occupied KBB savanna habitat. The majority of these areas are managed via prescribed burns. Conservation measures in the BO related to prescribed burns should insure viable KBB refugia are maintained to repopulate occupied burn units. Additional direct take of KBB eggs, larvae and adults is likely to occur from implementation of the other Refuge activities noted in Appendix A and Table 1. However, implementation of the conservation measures in this BO will result in avoiding or minimizing the impact of Refuge actions on the KBBs (refer to "Description of the proposed action re: species adversely affected by the action").

KBBs may be lost to wildfire suppression activities taken by the Refuge (e.g. crushing of eggs and larvae due to vehicular use). However, it is unlikely that a significant number of wildfires will occur in the KBB savanna units due to the maintenance of firebreaks, quick fire response capability of the Refuge, and the large amounts of wetland areas within the management units. Conservation Measure No. 10 has been included in this BO to minimize the impact of wildfires on the KBB occupied

management units. The measure directs the Refuge to assess the impact of wildfires on the KBB, and to adjust their burn management plan to remain as consistent as possible with the conservation measures related to burns in this BO (refer to “Description of proposed action re: species adversely affected by the action”).

Refuge actions in the YRFA that could result in the direct take of KBBs in the future are management activities (e.g. , burning, mowing, lupine seed collection) related to implementation of WMAs on private lands. As noted above, these impacts have been evaluated in a subsequent BO pertaining to the issuance of an ITP for implementation of the Wisconsin Statewide HCP for the KBB. Separate section 7 consultations are being conducted for each WMA between the Refuge and the Service’s GBFO.

Indirect effects

Indirect effects are defined as those that are caused by the proposed actions and are later in time, but still are reasonably certain to occur (50 CFR 402.02). An indirect effect of the Refuge’s education and outreach activities is the heightened awareness of the presence of the KBB on the Refuge and in Wisconsin. This could have both beneficial and adverse impacts on the butterfly. While an informed public is anticipated to help in conservation of the species, through volunteer activities and/or education of their family or peers, there may be some resultant take of KBBs by collectors or other individuals who perceive protection of a species on their lands by the Endangered Species Act as a threat to conducting their activities. However, due to the outreach efforts by the Refuge and the HCP partners, it is anticipated that more conservation of the species on private lands will occur than destruction of the species or its habitat.

A potential indirect effect of construction projects (e.g. Visitor’s Center) located near KBB occupied sites could be the inadvertent take of KBBs from vehicular traffic.

Cumulative effects

Cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section because they will require separate consultation pursuant to section 7 of the Act.

Private parties that are partners to the Wisconsin Statewide HCP will be providing educational information to landowners in the high potential range of the KBB, which includes the YRFA, for at least eight more year when the ITP expires (2009). It is anticipated that over time, this effort, as well as the efforts of the Central Wisconsin Basin Partnership may result in increasing conservation for the KBB in the YRFA.

Conclusion

After reviewing the current status of the KBB, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the species, and is not likely to destroy or adversely modify designated critical habitat. No critical habitat has been designated for this species; therefore, none will be affected.

Individual Refuge's activities are being implemented in a fashion to minimize harm to the KBB on the Refuge and on lands in the YRFA. Take of the KBB is limited to short term take, mainly associated with restoration and management of a total of about 3,500 acres of savanna. Only 0.5 acres of permanent take of habitat is anticipated. The benefits of savanna restoration and management coupled with the goal of restoring one large viable population of KBBs at Refuge will far outweigh the loss of KBBs resulting from Refuge activities described in this BO and will be a significant contribution to the recovery of the KBB in central Wisconsin.

Therefore, based on our review of the information concerning the proposed action and considering the information available to us on the biology, ecology, distribution, and abundance of the KBB, we have concluded that the proposed action is not likely to jeopardize the continued existence of the KBB.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns including breeding, feeding or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The reasonable and prudent measures (RPMs) and terms and conditions described below are non-discretionary, and must be undertaken by the Refuge so that they become binding conditions of this BO issued to the Refuge for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Refuge fails to assume and implement the terms and conditions of the BO and Incidental Take Statement, the protective coverage

of section 7(o)(2) may lapse. In order to monitor the impact of the incidental take, the Refuge must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR par. 402.14(i)(3)].

Amount or extent of take

Because it is difficult to detect and quantify the number of KBB eggs, larvae, or adults taken as a result of Refuge activities, take is expressed in acres of lupine habitat disturbed by Refuge activities. The disturbance of this habitat is expected to be short term, that is, lupine and KBBs are anticipated to re-occupy disturbed sites after management treatments or Refuge actions, therefore the take of KBBs is considered short-term (refer to discussion of short-term take in “Factors affecting species environment within the action area and analysis of effects”).

The Service anticipates a maximum of about 2,576 acres of short term take of KBB habitat (368 acres of existing KBB savanna habitat, and 2,208 acres of projected KBB habitat). About 0.5 acres of permanent take of KBB habitat may also occur as a result of graveling or paving of two hiking trails. The majority of the take will result from restoration and management of 3,500 acres of savanna. Minor amounts of take will also occur from those activities noted in Table 1 caused mainly by foot traffic, various investigations, and mowing. The amount of short term take will vary annually with only a subset of the total acres of KBB habitat affected by management treatments in any year. All management activities in KBB occupied areas will be conducted per the conservation measures in the HCP which are designed to minimize harm to the KBB and its habitat and promote recovery of the species.

In the accompanying BO, the Service determined that this level of anticipated take is not likely to result in jeopardy to the KBB or destruction or adverse modification of critical habitat. This non-jeopardy BO is based on implementation of the conservation measures for the KBB in the “Description of the proposed action re: species adversely affected by the action.”

Reasonable and prudent measures

The Service believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize impacts of the incidental take of the KBB.

1. The Refuge will incorporate the KBB conservation measures into the Refuge’s stepdown management plans e.g. Forest Management Plan, Cropland Management Plan, Grassland Management Plan, Fire Management Plan, Public Use Plan, Sign Plan, Integrated Pest Management Plan and any other plans, whose implementation could affect the KBB.
2. The Refuge will provide the information in this BO to all current and new staff members and hold an annual informational meeting with them to review the conservation measures, RPMs, and terms and conditions in the BO for conservation of the KBB.

3. The Refuge will provide KBB training to appropriate existing and new staff members. Training will include how to identify lupine and the KBB as well as information on the species range, habitat across the range, threats to the species, recovery goals, and some of the on-going conservation and recovery actions being taken across the range for the species. The Refuge should coordinate with the Service's GBFO for assistance in developing this information.
4. The Refuge will provide a recovery implementation plan (barrens restoration plan) for the KBB that is consistent with the Recovery Plan for the KBB. Plan development will be coordinate with the Service's GBFO to insure guidance being utilized is the most updated guidance available.
5. The Refuge will survey for KBBs annually on all occupied management units per methods developed by King (1998).
6. The Refuge will document and evaluate savanna restoration and management activities accomplished for the KBB. In addition, the burn protocols outlined in Conservation Measure No. 2 (Burning of savanna units, Description of the proposed action re: species adversely affected by the action) will be re-evaluated in two years.

Implementation of the RPMs above will insure that the protective measures contained in this BO for the KBB are implemented and communicated to staff members responsible for their implementation.

Terms and conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Refuge must comply with the following terms and conditions, which implement the RPMs described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

2. The Refuge will provide the Service's Green Bay Ecological Services Field Office draft copies of their stepdown management plans with a cover memo explaining how the plans are consistent with the conservation measures for the KBB in this BO and requesting concurrence on the finding.
2. The Refuge will advise the Service's GBFO of the date of the annual informational staff meeting to discuss the BO and invite their attendance at the meeting.
3. The Refuge will advise the Service's GBFO of the date of the KBB training session and invite their attendance at the session.
4. The Refuge will provide a recovery implementation plan (barrens restoration plan) for the KBB to the Service's GBFO by December 31, 2002. The plan will include a discussion of the metapopulation strategy being implemented, maps showing the location of the existing and proposed subpopulation areas, a long term monitoring plan to annually determine the overall

numbers of KBBs present in the metapopulation, and a discussion of the management strategy including use of prescribed burns and mowing, and conservation measures taken to minimize harm to the butterfly and its habitat.

5. The Refuge will provide the results of its annual KBB surveys to the Service's GBFO. Data reported will include the number of KBBs per complex name, the total number of KBBs on the Refuge, and a discussion on the findings relative to recovery goals. The annual report will be due by December 31 of each year (refer also to No. 6).
6. The Refuge will provide biannual (once every two years) reports to the Service's GBFO on management activities conducted on occupied KBB sites. The biannual report will include:
 - ? updated management (burn, mowing, hydro-ax) history for all the KBB complexes/burn units (include dates of treatments),
 - ? brief review how these management activities are consistent with the conservation measures in this BO,
 - ? recommendations for improving management for the conservation of the butterfly,
 - ? the total number of KBB occupied savanna acres on the Refuge, and total acres of KBB occupied savanna units burned and mowed during the reporting period, and
 - ? an updated map showing existing and new KBB complexes, burn units, potential habitat, and habitat to be restored.

The first report will be due December 31, 2003 and will include an evaluation of the 2001-2003 burn protocols outlined in Conservation Measure No. 2 (Burning of savanna units), evaluation of the effectiveness of the burn protocol, and recommendations (if any) for revision of the protocols.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The following conservation actions are recommended:

1. Encourage private landowners that may wish to treat for gypsy moths in the YRFA to use treatment methods that will not adversely affect the KBB. Advise them that technical advice from the Wisconsin Cooperative Gypsy Moth Program is available to the homeowner upon

request either from the local Wisconsin DNR county foresters or through county extension agents and that U.S. Forest Service cost-shared treatment programs are also available that utilize treatment methods that avoid impacts to the KBB. Other resources to check for information on the gypsy moth include the Gypsy Moth Program Coordinator with the Department of Agriculture, Trade and Consumer Protection in Madison, Wisconsin.

2. Conduct a survey for KBBs in the YRFA to determine if sufficient populations exist to contribute to establishment of a viable KBB population in conjunction with other lands in the area (e.g. Air National Guard Hardwood Range and Juneau and Wood Counties). Provide the findings of the survey to the Service's GBFO including a map of the study area and a summary of the KBB location information.
3. Cooperate in studies to help determine : 1) definitely whether KBB eggs and larvae survive fire (and the mechanism they use to do so, e.g. do larvae burrow into the ground to survive the fire? Are eggs somewhat fire resistant? if a larvae has it's host lupine patch burned how does it survive until lupine regrowth after the fire?), 2) the survival rate of KBB eggs and larvae, and 3) best time to conduct burns to insure maximum KBB survival.
4. Assess, document, and quantify the nature and aerial extent of the burns in the KBB occupied savanna areas of the burn units to better understand the nature of the refugia that remain after a fire.
5. Develop an educational slide presentation on the the KBB, covering identification of the butterfly and lupine, habitats used, range, threats, conservation and recovery actions being taken at Necedah NWR for the butterfly, and on-going conservation and recovery actions throughout the species range. Also provide information on how management of savannas for the KBB is benefitting other rare species e.g. phlox moth, persius dusky wing, slender glass lizard, prairie fame flower, and others.
6. Revise and update KBB video produced by the Refuge. Provide the draft text to the Service's GBFO for review and comment.
7. Print lupine/KBB identification cards as an information guide for people utilizing the refuge advising them to take care when working or traveling through lupine areas and make the cards readily available Refuge users.
8. Develop a KBB brochure with information on the KBB, its habitat, threats, recovery goals and FWS contacts should people see the butterfly outside of the Refuge. Consult with the Wisconsin Statewide HCP Coordinator, and the Service's GBFO prior to developing the brochure, to learn what other brochures may have been developed for the KBB. Provide a draft copy of the brochure to the Service's GBFO for review prior to printing.

9. Develop or assist with developing a savanna/barrens poster, highlighting the values savanna play in conservation of rare species, featuring the KBB. Develop the poster to be applicable to all Region 3 Midwest states with savanna/barrens habitat so it can be shared with other field offices. Include rare species from each state and some game species (sharp tail grouse) on poster. Consult with the Service's GBFO on development of the poster.
10. Develop additional outreach products to help promote conservation and recovery of the KBB. Coordinate outreach products with the Service's GBFO.
11. Coordinate and work with Air National Guard Hardwood Range, and Juneau and Wood Counties to assess the potential of establishing a viable population of KBBs on lands in the YRFA, and lands managed or owned by these entities.
12. When the opportunities arise, work with the public and other local, state or federal agencies to promote education and information about the KBB.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Reinitiation Notice

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action is authorized by law and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; (4) a new species is listed or critical habitat designated that may be affected by the action or **(5) the Refuge decides to deviate from implementation of the bald eagle, gray wolf, and EMR management guidelines (other than for reasons noted in this BO), and (6) if whooping cranes exhibit territorial, breeding or nesting behavior on the Refuge.** In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

EMERGENCY COORDINATION PROCEDURES:

For emergency actions that may affect Federal species (e.g. acts of god, disasters, activities to prevent imminent loss of human life or property) the following coordination procedures shall be followed *(this does not pertain to wildfire suppression and dam operations discussed in this BO as these are predictable events).*

- a. Upon the emergency, a staff person from Necedah NWR contacts (via telephone, email or fax, within 48 hours if possible) the Service's GBFO (Endangered Species Coordinator at 920-465-7415 or the office at 920-465-7440) followed by written correspondence. During this contact the Service's GBFO provides recommendations to minimize the effects of the emergency response action on listed species or their critical habitat. No actions will be recommended that will stand in the way of the response efforts.
- b. If the Service's GBFO determines that the initial review indicates the action may result in jeopardy to the species or adverse modification of critical habitat, and no means of reducing or avoiding this effect are apparent, the Service's GBFO should advise Necedah NWR of the finding and document the conclusions.
- c. As soon as the emergency is under control, Necedah NWR will initiate formal consultation with the Service if listed species have been adversely affected.

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Appendix A

List of Refuge Actions Considered in this BO.

Activities/Goals in Draft CCP

(USFWS, 2000a; revised pp.58-70)

4.1 Listed and Candidate Species

Objectives/actions discussed in “Description of proposed action” section of BO

Waterfowl and Other Migratory Birds

Actively protect, restore, establish and manage populations of waterfowl and migratory birds (including water level management of impoundments)

4.2 Habitat Restoration and Management Projects

Establish and actively manage 4,300 acres of savanna habitat

Prescribe burn savanna management units to support nesting birds and KBBs

Maintain openings with use of hydro-axe to complement prescribed burn program

Operate fire control equipment (including a pump engine) to increase the effectiveness of both burning and fire suppression activities

Construction of storage building to protect fire management vehicles

Maintain a high quality fire management program to reduce damage related to wildfires

Limit pest plants to current acreages and reduce their impact on rare plant communities

4.3 Resource Protection

Implement conservation actions in Yellow River Focus Area (YRFA)

Complete baseline inventory and cover type mapping for the Refuge and lower YR watershed.

Conduct archaeological investigations on Refuge.

Investigate all potential contamination sites on Refuge lands

Land Acquisition

Preserve wetland, upland and riparian habitats with the YRFA through voluntary partnerships

Acquire voluntary partnership agreements, conservation easements, and fee-title ownerships on about 250 acres per year from willing sellers with the YRFA

Studies and Investigations

Support, promote, and coordinate scientific research on fish, wildlife, and human resources that utilize the Refuge, to improve management decision making

Complete baseline inventory and cover type mapping for the Refuge and YRFA

Surveys and Censuses

Refuge will continue to conduct survey e.g. waterfowl, sandhill cranes, mourning doves, woodcock, songbirds, KBBs, EMRs, and wolf .

Refuge may conduct surveys for rare species of state concern.

4.5 Cooperative Programs

Provide technical assistance to landowners in the YRFA to restore native grasslands

Restore a minimum of 15 wetlands per year on private land within the Necedah Private Lands District

4.6 Public Recreation and Education

Complete the Ellen Allen Outdoor Learning Center

Develop an observation tower

Develop an additional five miles of recreational/interpretive trails

Create and maintain at least two new off-road parking areas for hunters

Develop and build a visitors center

Erect signs, two interpretive kiosks, and site interpretation signage

Other construction projects e.g. universally accessible fishing pier, hunting blind, and hard surface trail or boardwalk

4.7 Planning and Administration Projects

Construct a storage building for vehicles, equipment and maintenance implements

Construct a containment facilities for hazardous materials

Support work training programs such as the Wisconsin Conservation Corps and the Private Industry Council's youth training program

Other Refuge Programs (3.1 Operational Components, pp. 20-21)

Reintroduction activities

Public hunting and trapping

Coordination of gypsy moth survey activities with the Wisconsin Department of Agricultural, Trade, and Consumer Protection (DATCP).

Other Actions Considered (from BA or Service's GBFO).

Silvicultural activities in occupied KBB areas

Roadside mowing (within KBB occupied areas)

Miscellaneous activities not mentioned in this Appendix or the BA that are minor and may result in some trampling or compaction of lupine plants from vehicular or foot traffic.

